

# KSN 2016 Abstract Submission

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### **Clinical utility of miRNAs in urinary exosomes for the diagnosis of BK virus nephropathy after kidney transplantation**

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**Background:** BK virus nephropathy (BKVN) is an important cause of allograft dysfunction and failure after kidney transplantation (KTP). Polymerase chain reaction (PCR) demonstration of BK viral replication in plasma and urine could support the diagnosis of BKVN. Nonetheless, renal biopsy is mandatory for the definitive diagnosis of BKVN, which is invasive and requires unnecessary admission. Recently, bkv-miR-B1-5p, one of the miRNA that is encoded by BK virus (BKV), was found to have a strong correlation with BKV DNA in blood and biopsy-proven BKVN. We evaluated the utility of BKV related miRNA in urinary exosomes for the diagnosis of BKVN in renal allograft recipients.

**Methods:** A total of 80 kidney transplant recipients including 13 patients with BKVN were enrolled in this study. bkv-miR-B1-5p and miR-16 were isolated from urine supernatant and assessed by quantitative real-time PCR. BKV DNA loads in plasma and urine were measured by commercial PCR kit and compared with miRNA levels.

**Results:** Urinary bkv-miR-B1-5p Levels were significantly higher in BKVN group than all the other groups, and this finding was consistent after normalization with miR-16 generated from Kruskal-Wallis test ( $p < 0.001$  and  $p < 0.001$ , respectively). Both urinary bkv-miR-B1-5p and bkv-miR-B1-5p/miR-16 showed positive correlation with plasma BKV DNA titer ( $p < 0.001$ ,  $r = 0.609$  and  $p < 0.001$ ,  $r = 0.830$ , respectively). The area under the curve (AUC) for bkv-miR-B1-5p/miR-16 showed excellent values in the diagnosis of BKVN using Receiver operator characteristics (ROC) curve analysis (0.989 and 0.985, respectively). AUC of plasma and urine BKV DNA titer was slightly lower than miRNAs (0.932 and 0.914, respectively).

**Conclusion:** Our data suggest that urinary bkv-miR-B1-5p and bkv-miR-B1-5p/miR-16 be surrogate markers for the diagnosis of BKVN. Further study should be designed to validate the efficacy of these miRNAs.

**Keywords:** BK virus, Kidney Transplantation, microRNA